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(54) **RACK-KNAPSACKS**

(57) **Abstract:**

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This invention relates to knap-sacks and particularly of the type which are mounted on a rack/structure made of steel/rods.

In present day knapsacks having steel/racks the construction of the rack is such that the carrying person will support the mass of the knapsack substantially on that portion of his body which is situated in the region of his shoulder/blades, the lower portion of the knapsack being at the same time held in slightly spaced relation to the body due to the fact that the rack has a transversally extending supporting member which rests against the small of the back. One disadvantage of such previously known rack-knapsacks resides in that the movements of the carrying person when walking and particularly when skiing will be highly checked.

The principal object of the present invention is to eliminate this disadvantage by providing a rack-knapsack the steel/rack of which is provided at its upper portion with two projecting brackets or supports by means of which the rack will rest upon the shoulders of the carrying person slightly above his clavicles. Thereby the point of gravity of the load will be located quite close to the person's body, and the freedom of motion will be very great owing to the fact that the rack will easily follow the shoulder movements of the carrying person when walking or skiing. Practical tests with the new rack-knapsack have shown that it is possible, without getting more tired, to carry considerably heavier loads than has been possible with rack-knapsacks of hitherto known constructions.

Another object of the invention is to provide a knapsack of the kind stated in which the said brackets are pivotally mounted on the steel-rack to enable them to be folded-in when not in use.

A further object of the invention is to provide a rack-knapsack of the kind stated in which the said brackets are mounted on the steel-rack so as to be transversely displaceable thereon within certain limits to accommodate to persons having broader or narrower shoulders.

A still further object of the invention is to provide a rack-knapsack of the kind stated in which the said brackets are, in addition, mounted on the steel-rack so as to be rotatable relative to the rack about their own longitudinal axis in order to accommodate to persons having straight or sloping shoulders.

Further objects and advantages of the invention will appear from the following description with reference to the accompanying drawings in which:

Fig. 1 is a perspective view of a rack-knapsack according to the invention as seen from the back-side;

Fig. 2 shows a vertical section through the knapsack standing on a support;

Fig. 3 shows a similar section through the steel-rack but with a guide member belonging to the carrying-equipment being slid into a position adapted for persons having "thin" shoulders;

Fig. 4 is a top-view of the steel-rack.

Fig. 5 is a top-perspective view of a portion of the steel-rack with one of the brackets according to a

slightly modified embodiment of the invention;

Fig. 6 is a top-view similar to that of Fig. 4 but showing a pair of brackets according to a further modified embodiment of the invention; and

Fig. 7 is a vertical section along lines VII-VII in Fig. 6.

Referring now to the drawings the rack 1 of the knapsack is assumed to be made of round bar. In the embodiment shown in Figs. 1 - 4 the several parts of the rack are welded together into a unitary structure. The main part of the steel-rack is constituted by a frame substantially conforming, as seen from aside (Figs. 2 and 3), to the contour of the back of the carrying person. From the top-portion of the frame 2 two U-shaped brackets 3 project in a forward and downward direction and serve, in use, for carrying the knapsack upon the shoulders. Two side-members 4 project in a forward direction from the bottom-portion of the frame 2 and will, in use, be situated at the level of the waist of the carrying person. Waist-supporting members 5 of, for example, leather are attached to the side-members 4. Secured to the frame 2 between the waist-supports 5 but completely separated therefrom is a supporting member 6 for the small of the back which member is also preferably made of leather. A similar supporting member 7 for the shoulder-blades is secured to the upper portion of the frame 2. The shoulder support 7 is provided at its upper edge with holes 8 (Fig. 4) through which a leather strap 9 (Fig. 2) can be threaded in order to attach the knapsack 10 to the rack 1. Two

retaining straps 11 (Fig. 1, 2 and 3) serve for securing the bottom portion of the knapsack to the steel-rack. The knapsack 10 rests on a carrier-shelf 12 projecting rearwardly and substantially horizontally from the frame 2. The carrier-shelf 12 is provided at its rear end with a bent-down portion 13 which together with the side-members 4 serve as legs for supporting the knapsack 10 so that when the rack-knapsack is placed upon the ground (Fig. 2) the knapsack 10 will be situated in slightly spaced relation thereto whereby is ensured that the knapsack and its contents will not get wet if the ground is damp.

The rack-knapsack is provided, as usual, with two carrier straps 14 being attached at their upper ends to the top portion of the frame 2, and being at their lower ends inserted in a buckle provided on the free ends, respectively, of two corresponding straps 16 the other ends of which are attached to the side-members 4, respectively. In addition, the rack-knapsack is provided with two shoulder-pads 17, preferably of rubber sponge and being attached to the suspension brackets 3 by means of fastening bands 18. The upper end portion of each fastening band 18 is laid around a transversal strengthening pin 19 interconnecting the two legs 20 of the U-brackets 3, respectively. The outer end of each fastening band 18 is provided with a sleeve 21. Each bracket 3 is provided with a guide member 22 suitably made of a leather strip and extending between the legs 20, being formed at its ends with loops which surround the legs 20, respectively, so that the guide member can be displaced longitudinally of the

latter. The carrier straps 14 are passed through the space between the bracket-legs 20 in such a manner as to be situated between the guide member 22 and the intervening portion 23 of the brackets 23 which interconnects the legs 20 at their outer ends. In addition the carrier straps 14 are passed through the sleeves 21 on the fastening bands 18, respectively. This arrangement makes it possible to adjust the rack-knapsack in such a manner as to be suitable to be carried both by stout-built persons having "thick" shoulders and by more weakly-built persons having "thin" shoulders. In the latter case the guide members 22 will be slid to the right, as seen in Fig. 3, in which figure the shoulder is indicated in broken lines, whereby the carrier straps 14 will pass by the forward ends of the shoulderpads 17 without exerting any denotable pressure upon the chest of the carrier. For more stout-built persons the guide members 22 will be slid towards the front-most portions 23 of the brackets 3, respectively, the carrier straps 14 then obtaining a tension substantially the same as in Fig. 3 but being situated in a more forwardly extended position resulting in that in this case, too, there will result no squeezing of the shoulder portion or of the upper part of the chest portion.

For retaining the supporting member 6 against the small of the back in use the usual waist-strap 24 serves. The side-members 4 are formed at their front ends with loops 25 which may serve for attaching snap hooks or the like of pulling ropes for pulling, for instance, a sledge while skiing, or for attaching snap hooks of carrier

straps for a stretcher or the like.

The knapsack 10 is, as usual, provided with a flap 26, a rear-pocket 27 and two side-pockets 28. The knapsack is interiorly provided with a bottom plate which ensures that, in its condition of use, the knapsack 10 will substantially maintain its shape. For drawing the knapsack together at its upper end when the flap 26 is to be put on a closing strap 30 is provided, and the sack is so shaped that upon tightening this strap the upper portions only of the side-walls of the sack will be folded double, (see the broken line at the upper corner at the right in Fig. 2). One advantage of this formation resides in that the knapsack will be comparatively spaceous and that the load can be disposed in the sack in such a manner that the point of gravity will be situated in close proximity to the back of the carrying person.

An advantage of the waist-supports 5 being completely separated from the support 6 for the small of the back resides in that the tensioning of the latter will be quite independent of the position of the two waist-supports 5.

In the embodiment shown in Fig. 5 the brackets 3a are pivotally mounted on the upper frame-portion of the steel-rack 1, said frame-portion consisting of two rods 31, 32 arranged in spaced parallel relation and interconnected by transversal studs 33. The bracket-legs 20a are at one end formed into an eye 34 loosely surrounding the rod 31 situated next to the knapsack 10 (not shown in this figure). When the rack-knapsack is carried the bracket-legs 20a are

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pressed against the under-side of the rod 32 and will then occupy the position shown in full lines in Fig. 5. When the knapsack is to be transported in vehicles or kept in storerooms the brackets 3a should be folded down (see the broken lines in Fig. 5) which makes the rack-knapsack less bulky. In addition, the brackets 3a will be laterally displaceable along the rod 31 whereby the knapsack can be adjusted within certain limits in such a manner as to be capable of being conveniently carried both by broad-shouldered and by narrow-shouldered persons. The lateral displacement of the brackets 3a will be limited by contact of one or the other of the legs 20a with the transversal stud 33. After mounting the brackets 3a they are, in the manner indicated in the foregoing, provided with the shoulder-pads 17 which are attached to the transversal studs 19a, and further with the guide members 22 displaceable along the bracket-legs 20a.

Referring now to the embodiment shown in Figs. 6 and 7, only the upper suspension bracket in Fig. 6 is shown complete with a shoulder-pad 17, a fastening band 18 for the latter, and a carrying strap 14. The fastening band 18 is attached around that rod 32 of the upper part of the steel-rack, which is situated next to the back of the carrying person, and the carrying strap 14 is attached to that rod 31 which is situated next to the knapsack (not shown in the drawing). At the locality of attachment of the carrying strap the latter is provided with a longitudinally extending slit 35. As will be seen from Fig. 7 and the lower portion of Fig. 6, the bracket 3b is formed

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at one end with an eye 3⁴b fitting the rod 31 with deliberate clearance, the shank of the bracket extending from said eye beneath the rod 32. By this means the bracket will not only be pivotable in a vertical plane (a plane perpendicular to the plane of Fig. 1) but also turnable about the longitudinal axis of the bracket. Accordingly, it is capable of adjusting itself in accordance with the slope of the shoulder of the carrying person. The suspension brackets 3b together with their shoulder-pads 17 and the carrying straps 14 can be displaced closer to or farther from each other on the rod 31 in the opening 36 between the transversal studs 33. The eye 3⁴b is received in the slit 35 in the carrying strap 14 causing the respective bracket to be retained in an adjusted position of lateral displacement owing to the friction existing between the carrying strap and the rod 31.

It will be understood that the embodiments described and illustrated are to be considered merely as given by way of example as the rack and the knapsack can be varied in several different ways within the scope of the invention.

What I claim and desire to secure by Letters Patent is:

1. A rack-knapsack comprising a metal rack including a substantially vertical frame adapted to rest on the back of a carrying person, and a substantially horizontal frame extending rearwardly from the lower portion of said vertical frame, and a knapsack attached to both said frames, said rack having a lower transversal supporting member for the small of the back, an upper transversal member forming a part of said vertical frame, carrying straps attached to said upper transversal member and corresponding straps attached to the lower corners of said rack and two forwardly projecting bracket members secured to said upper transversal member of said rack, said brackets being adapted to rest upon the shoulders and slightly above the clavicles of a carrying person.

2. A rack-knapsack as claimed in claim 1 in which said forwardly projecting bracket members are U-shaped, and the parallel legs of said members are sufficiently spaced apart for said carrying straps to be passed between said legs of said bracket members, respectively.

3. A rack-knapsack as claimed in claim 2 comprising a transversal stud interconnecting the legs of each U-shaped bracket member, a guide member extending transversally between said legs exteriorly of said transversal stud, said guide member being displaceable along said legs, a shoulder-pad pivotally mounted on each said transversal stud by means of a fastening band, a sleeve

member carried by said fastening band at the outer, free end thereof, the arrangement being such that said guide member will be situated between said fastening band for said shoulder-pad and said carrying strap, the latter being passed through the space between said guide member and the transversal portion interconnecting the legs of said U-shaped member at its forward end and through said sleeve member.

4. A rack-knapsack as claimed in claim 1 comprising two waist-supporting members arranged on said rack at the level of said supporting member for the small of the back but independently of said last-named supporting member.

5. A rack-knapsack comprising a metal rack including a substantially vertical frame adapted to rest on the back of a carrying person, and a substantially horizontal frame extending rearwardly from the lower portion of said vertical frame, and a knapsack attached to said rack, said horizontal frame being in the form of a supporting shelf constituting a support for said knapsack proper, a downward extension formed at the free end of said shelf, and two downwardly projecting side-members at the forward end of said shelf, said extension together with said side-members supporting said knapsack in slightly spaced relation to the ground when the rack-knapsack is placed thereon.

6. A rack-knapsack as claimed in claim 5 in which said side-members are formed with loops or eyes for attaching snap hooks of pulling ropes to be used in pulling a sledge or the like.

7. A rack-knapsack comprising a metal rack including a substantially vertical frame adapted to rest on the back of a carrying person, and a substantially horizontal frame extending rearwardly from the lower portion of said vertical frame, and a knapsack attached to both said frames, said rack having an upper transversal member forming a part of said vertical frame, carrying straps attached to said upper transversal member, and corresponding straps attached to the lower corners of said rack and two forwardly projecting bracket members pivotally and laterally displaceably mounted on said transversal member, said brackets being adapted to rest upon the shoulders slightly above the clavicles of a carrying person.

8. A rack-knapsack as claimed in claim 7 in which said bracket members, in addition to their being pivotable in a vertical plane relative to said rack, are also turnable relative to the same about their own longitudinal axis.

9. A rack-knapsack as claimed in claim 8 in which said upper transversal member of said rack comprises two rods horizontally spaced in parallel relation and each bracket member is formed at its rear end with an eye fitting with deliberate clearance that one of said rods which is situated next to said knapsack, and a portion of said bracket member extends forward beneath the other one of said rods.

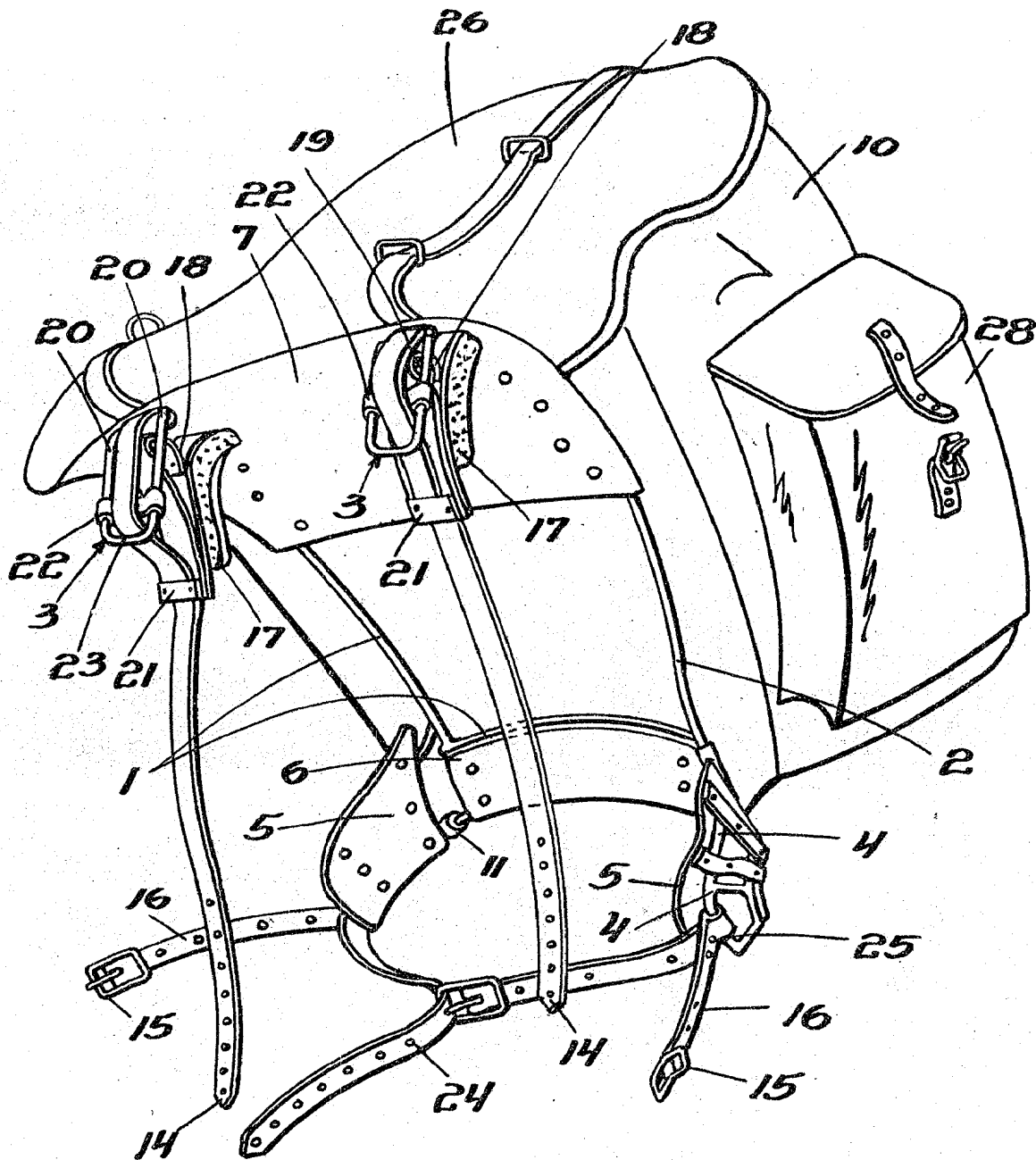
10. A rack-knapsack comprising a metal rack including a substantially vertical frame adapted to rest on the back of a carrying person, and a knapsack attached to said frame, said rack having an

upper transversal member consisting of two rods horizontally spaced in parallel relation, carrying straps attached to that one of said rods which is situated next to the knapsack and corresponding straps attached to the lower corners of said rack, two forwardly projecting bracket members pivotally and laterally displaceably mounted on that one of said parallelly spaced rods which is situated next to the knapsack, said bracket members being U-shaped with the parallel legs thereof sufficiently spaced apart for said carrying straps to be passed between said legs of said brackets, respectively, a shoulder-pad pivotally mounted on each said bracket member by means of a fastening band, said fastening band for said shoulder-pad being attached to the other one of said rods; a guide member displaceable along said bracket legs, and a sleeve member carried by said fastening band at the outer, free end thereof, the arrangement being such that said guide member will be situated between said fastening band for said shoulder-pad and said carrying strap, the latter being passed through the space between said guide member and the transversal portion interconnecting the legs of said U-shaped bracket member at its forward end and through said sleeve member.

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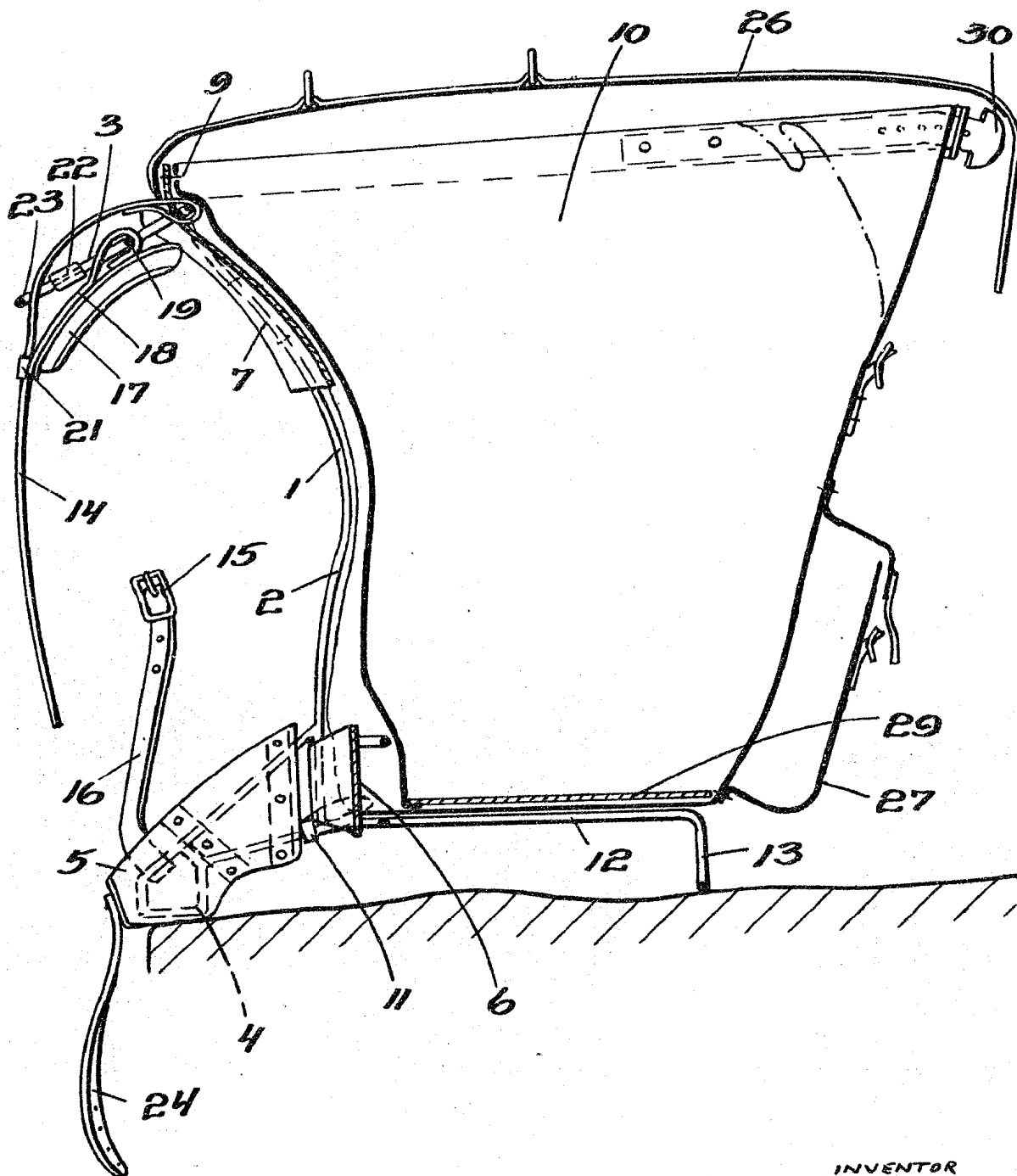
FIG. 1



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FIG. 2



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FIG. 4

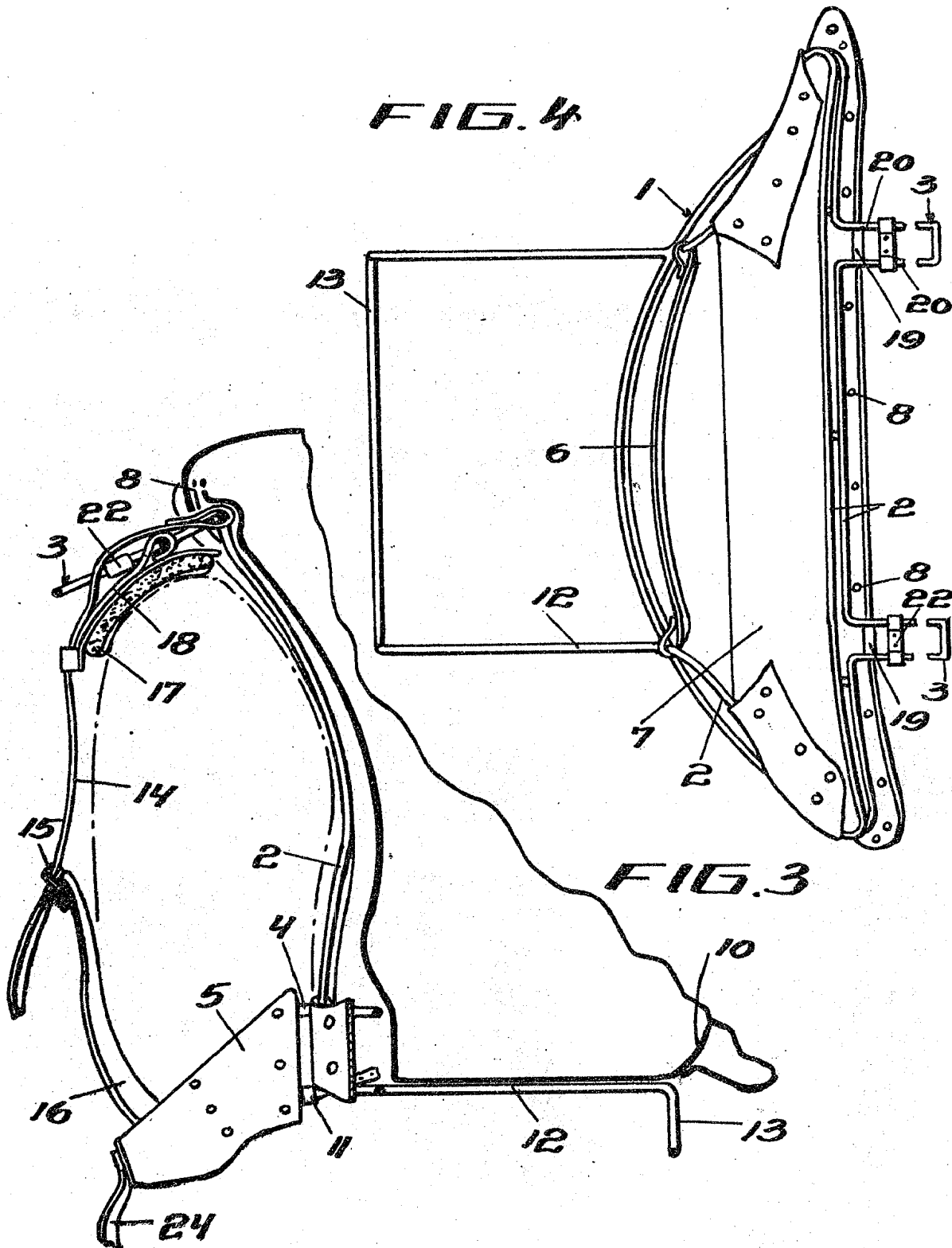
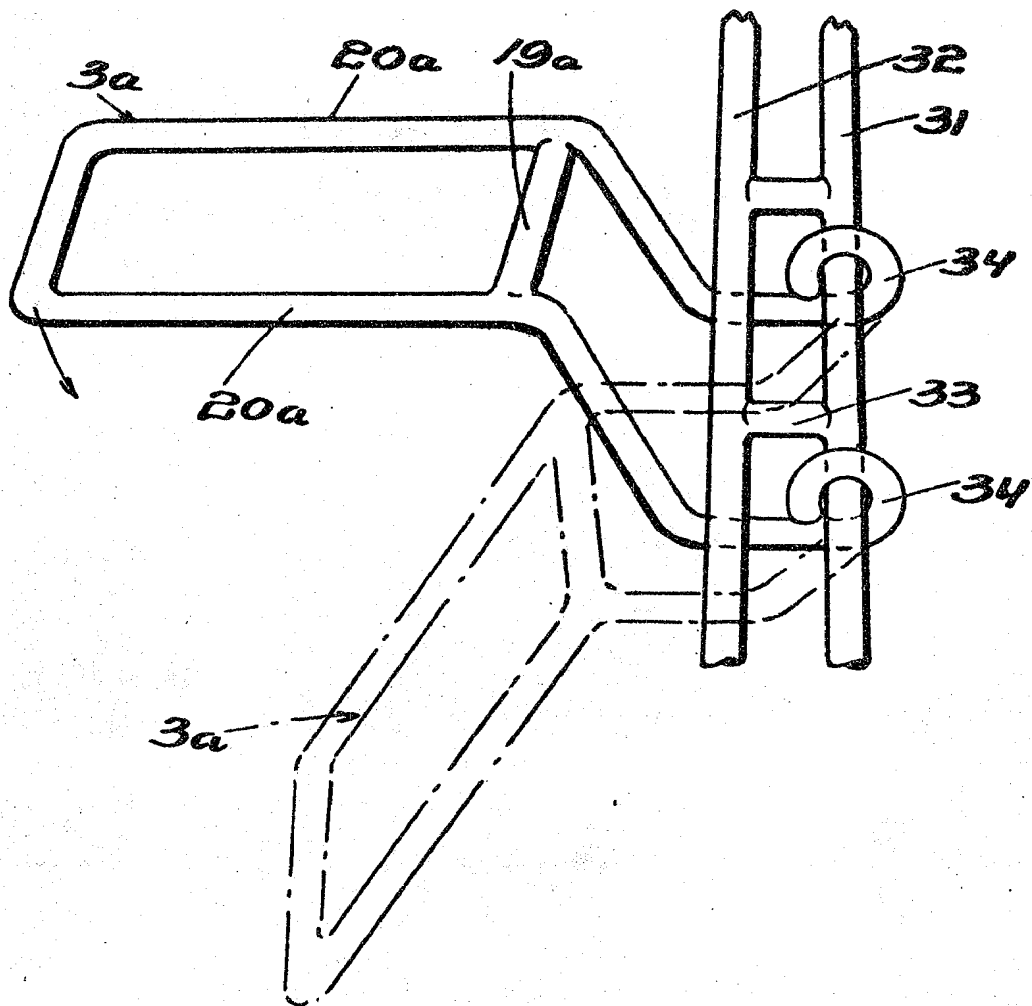


FIG. 3

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FIG. 5



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FIG. 6

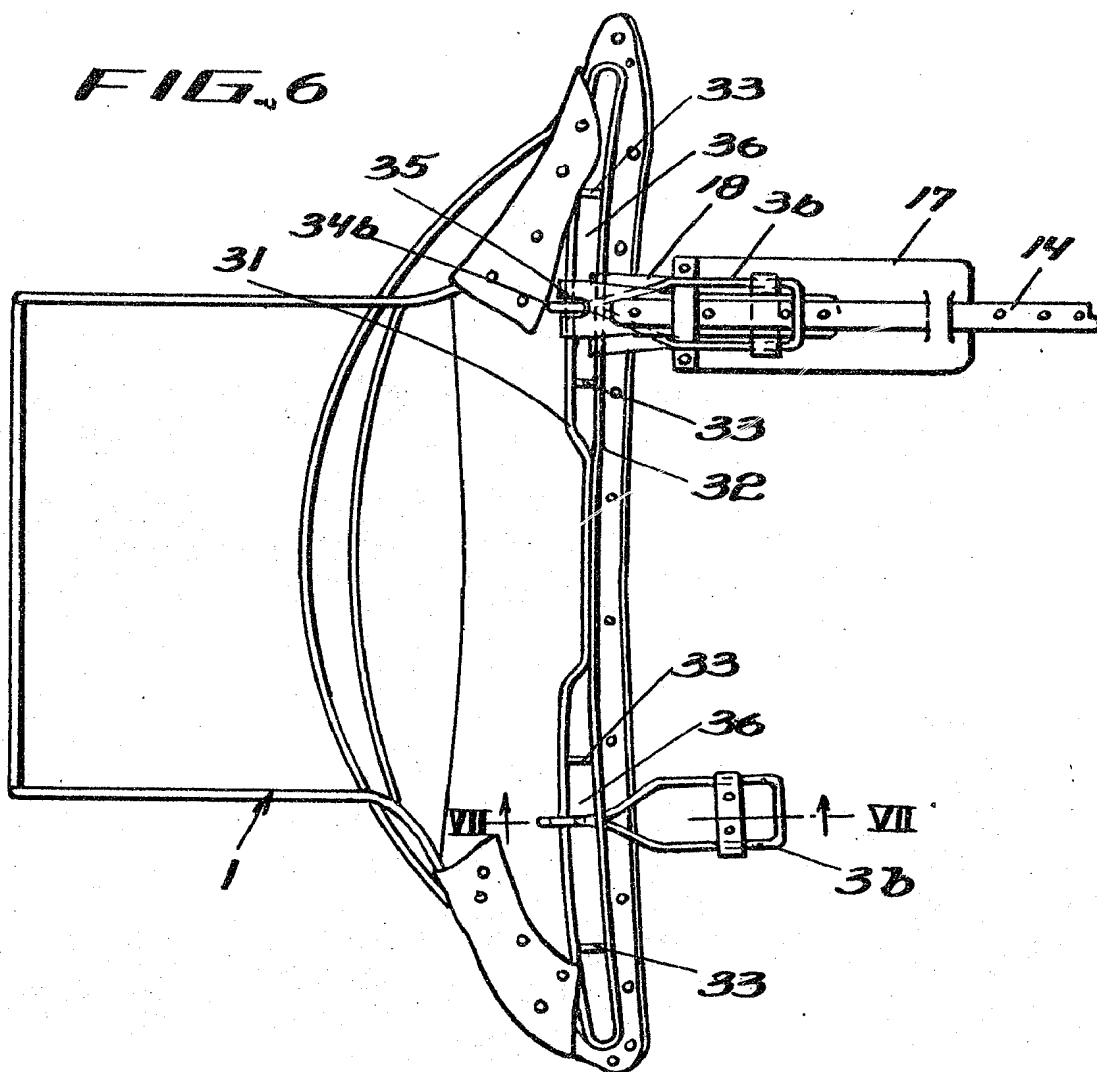
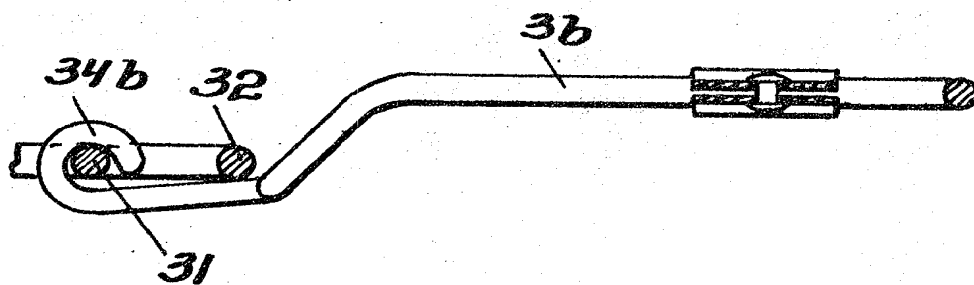


FIG. 7



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